First,	$3x+2z=3[3y+2u]\ldots(1);$
Second,	$2x+6v=8\{2[1-(x+y)]+6[1-(v+w)]\}\ldots(2);$
Third,	$2u+3w=5\{2[1-(z+u)]+3[1-(v+w)]\}\ldots(3);$
Fourth,	$x+2z+3v=2(y+2u+3w)\ldots(4);$
Fifth,	$x+z:y+u::11:5\ldots(5)$; and
Sixth,	$6x+5z+2v:13::17:24\ldots(6)$.

By elimination, we have $x=1$, $y=0$, $1-(x+y)=0$, $z=\frac{3}{8}$, $u=\frac{5}{8}$, $1-(z+u)=0$, $v=\frac{2}{3}$, $w=\frac{5}{24}$, and $1-(v+w)=\frac{1}{8}$.

We interpret these results as follows: That the first ingot was pure gold; that the second ingot was 9-carat gold, and 15-carat silver; and that the third ingot was 16-carat gold, 5-carat silver, and 3-carat copper.

Also solved in the same manner by G. B. M. Zerr, S. A. Corey, L. E. Newcomb, and G. W. Greenwood.

274. Proposed by R. D. CARMICHAEL, Anniston, Ala.

Find the limit of $\frac{3^2+1}{3^2-1}\cdot\frac{5^2+1}{5^2-1}\cdot\frac{7^2+1}{7^3-1}\cdot\frac{11^2+1}{11^2-1}\ldots$ where the squared numbers are the natural odd *primes* in order.

Solution by G. B. M. ZERR, Ph. D., Parsons, W. Va., and J. SCHEFFER, A. M., Kee Mar College, Hagerstown, Md.

Putting the expression in the form

$$\frac{(1+1/3^2)(1+1/5^2)(1+1/7^2)\ldots}{(1-1/3^2)(1-1/5^2)(1-1/7^2)\ldots}=\frac{s}{s^1}$$

and remembering that $(1+1/2^2)s=\frac{15}{\pi^2}$ and $(1-1/2^2)s_1=\frac{6}{\pi^2}$, (pp. 133-134, Vol. V, No. 5), we have $s/s_1=1\frac{1}{2}$.

C. N. Schmall gives the following arithmetical solution of 269. When the boats first meet, combined distance traveled is equal to width of river; when they meet for the second time the distance traveled is equal to three times the width of river and that each boat has gone three times as far as when they first met. Hence one has gone 3×720 yards$=$ 2160 yards and has made one trip and 400 yards of the return trip· Hence, width of river $=2160$ yards-400 yards$=1760$ yards$=1$ mile.

GEOMETRY.

302. Proposed by F. H. SAFFORD, Ph. D., University of Pennsylvania.

Through a given point within a circle draw any two chords, also a radius and a secant perpendicular to the radius. Let the extremities of the chords be taken as the vertices of a quadrilateral. Show that the sides of the quadrilateral, produced when necessary, cut the secant in points equidistant, in pairs, from the given point. [A proof by Euclidean geometry is preferred, as the problem was originally given to a high school class.] Must the given points be within the circle?